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ALOYSIUS T C AUYEUNG  
BLAKELY SOKOLOFF TAYLOR & ZAFMAN  
12TH FLOOR  
12400 WILSHIRE BOULEVARD  
LOS ANGELES, CA 900251206

EXAMINER

NGUYEN, FRANCIS N

ART UNIT

PAPER NUMBER

2674

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*Handwritten signature*

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

08/993,104

Applicant(s)

ROSENBERG ET AL.

Examiner

FRANCIS NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Continued Prosecution Application*

1. The request filed on 5/08/2003 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 08/993,104 is acceptable and a CPA has been established. An action on the CPA follows.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 is indefinite because it depends on canceled claim 15.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-14, 17-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahara et al. ( US Patent 5,436,635) in view of Shields ( US Patent 4,870,396).

As to claims 1 and 14, Takahara et al. discloses a circuit for modulating voltage signals and associated method comprising: a first circuit configuration to substantially drive respective positive and negative voltage signals, ( source driver IC(p) 11 and IC(M) 12 shown in figure 2)

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and a second circuit configuration ( TFT as switching elements for writing signal to pixel electrodes, column 6, lines 63-64 to alternately sample the respective voltage signals ( changeover circuits , column 19, lines 55-65) at a substantially predetermined rate. However, Takahara et al. fails to teach voltage signal storage elements. Shields teaches voltage storage elements ( storage capacitors 24, figure 4, column 2, lines 58-63). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the apparatus of Takahara et al. and provide storage capacitors at pixel cell , as taught by Shields to obtain the apparatus Takahara et al. modified by Shields because it would provide a sample and hold circuit as taught by Shields (column 2, lines 58-60) and facilitate storage of video signal. Note that Takahara et al. teaches first field scanning operation with applied signal V+ and second field scanning operation with applied signal V- ( column 14, lines 40-68) , the signal written into each pixel electrode changes in polarity ( column 14, lines 65-68), the aforementioned TFT as switching elements for writing signal to pixel electrodes operates independently of other TFT ; this corresponds to the claimed first circuit adapted to apply the respective positive and negative voltage signals onto the first and second voltage storage elements independently of application of voltage signals to other storage elements.

As to claim 2, Takahara et al. modified by Shields teaches liquid crystal cell ( Shields, liquid crystal cell shown in figure 4).

As to claim 3, Takahara et al. modified by Shields teaches AC driving ( Shields, column 1, lines 57-59 implies driving frequency), this corresponds to the claimed substantially at a predetermined rate is related, at least in part to the particular liquid crystal material of the liquid crystal cell

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As to claim 4, the circuit of claim 2, wherein said first circuit configuration includes circuitry to address said liquid crystal cell ( Shields, transistor 22 shown in figure 4).

As to claim 5, wherein said circuit for modulating voltage signals is coupled in a liquid crystal display (LCD system) ( Takahara et al. , phase division circuit 42 shown in figure 3), said LCD system being adapted to substantially simultaneously ( simultaneously operating GIC (P) and GIC (M), Takahara et al., column 19, lines 13-15) and independently drive additional voltage signals ( applying on-voltage to every other gate signal line , Takahara et al., column 19, lines 13-15) onto the voltage signals of the respective first and second voltage signal storage elements ( Shields , storage capacitors 24, figure 4, column 2, lines 58-63).

As to claim 6, the circuit of claim 2, wherein said second circuit comprises a plurality of transistors coupled to electrically isolate said first and second voltage signal storage elements ( Shields , storage capacitors 24, figure 4, column 2, lines 58-63) from said liquid crystal cell ( TFT Tp11 and Tm11 per pixel cell as shown in figure 1)

As to claims 7 and 17, the circuit of claim 1, wherein the first and second voltage storage elements comprise capacitors ( Shields , capacitors 24 shown in figure 4).

As to claim 8, the circuit of claim 1, wherein said circuit for modulating voltage signals is embodied on an integrated chip ( Takahara et al., column 13, lines 23-35).

As to claim 9, Takahara et al. discloses a liquid crystal display system ( LCD image projection television system, column 7, lines 41-42) comprising a voltage signal modulation circuit to locally modulate the voltage signal applied across a liquid crystal cell in said LCD system: a first circuit configuration to substantially simultaneously ( simultaneously operating GIC (P) and

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GIC (M), Takahara et al., column 19, lines 13-15) and independently drive respective positive and negative voltage signals (applying on-voltage to every other gate signal line, Takahara et al., column 19, lines 13-15), (source driver IC(p) 11 and IC(M) 12 shown in figure 2) and a second circuit configuration (TFT as switching elements for writing signal to pixel electrodes, column 6, lines 63-64 to alternately sample the respective voltage signals (changeover circuits, column 19, lines 55-65) at a substantially predetermined rate. However, Takahara et al. fails to teach voltage signal storage elements. Shields teaches voltage storage elements (storage capacitors 24, figure 4, column 2, lines 58-63). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the apparatus of Takahara et al. and provide storage capacitors at pixel cell, as taught by Shields to obtain the apparatus Takahara et al. modified by Shields because it would provide a sample and hold circuit as taught by Shields (column 2, lines 58-60) and facilitate storage of video signal. Note that Takahara et al. teaches first field scanning operation with applied signal V+ and second field scanning operation with applied signal V- (column 14, lines 40-68), the signal written into each pixel electrode changes in polarity (column 14, lines 65-68), the aforementioned TFT as switching elements for writing signal to pixel electrodes operates independently of other TFT; this corresponds to the claimed first circuit adapted to apply the respective positive and negative voltage signals onto the first and second voltage storage elements independently of application of voltage signals to other storage elements.

As to claim 10, the LCD system of claim 9, and further comprising at least one liquid crystal cell coupled to said voltage signal modulation circuit (Shields, liquid crystal cell shown in figure 4).

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As to claim 11, the LCD system of claim 10, Takahara et al. modified by Shields teaches AC driving ( Shields, column 1, lines 57-59 implies driving frequency), this corresponds to the claimed substantially at a predetermined rate is related, at least in part to the particular liquid crystal material of the liquid crystal cell.

As to claim 12, the LCD system of claim 10, wherein said system includes circuitry to address said at least one liquid crystal cell ( Shields, transistor 22 shown in figure 4).

As to claim 13, the LCD system of claim 10, wherein said LCD system is adapted to substantially simultaneously ( simultaneously operating GIC (P) and GIC (M), Takahara et al., column 19, lines 13-15) and independently drive additional voltage signals( applying on-voltage to every other gate signal line , Takahara et al., column 19, lines 13-15) onto the respective voltage signals storage elements( Shields , storage capacitors 24, figure 4, column 2, lines 58-63).

As to claims 18 and 22, Takahara et al. discloses a voltage signal modulation circuit and associated method comprising:

- a first circuit to substantially simultaneously drive respective voltage signals simultaneously ( source driver IC(P) 11 and IC(M) 12 shown in figure 2, simultaneously operating GIC (P) and GIC (M), column 19, lines 13-15);

- a second circuit to sample the voltage signals (TFT as switching elements for writing signal to pixel electrodes, column 6, lines 63-64 to alternately sample the respective voltage signals ( changeover circuits , column 19, lines 55-65) .

However, Takahara et al. fails to teach voltage signal storage elements. Shields teaches voltage storage elements ( storage capacitors 24, figure 4, column 2, lines 58-63). It would have been

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obvious to a person of ordinary skill in the art at the time of the invention to utilize the apparatus of Takahara et al. and provide storage capacitors at pixel cell, as taught by Shields to obtain the apparatus Takahara et al. modified by Shields because it would provide a sample and hold circuit as taught by Shields (column 2, lines 58-60) and facilitate storage of video signal.

As to claim 19, the voltage signal modulation circuit of claim 18, wherein the voltage signals comprise respective positive and negative voltage signals( source driver IC(P) 11 and IC(M) 12 shown in figure 2, simultaneously operating GIC (P) and GIC (M), column 19, lines 13-15); and the respective voltage signal storage elements comprise two respective voltage signal storage elements ( since Takahara et al. teaches two TFTs Tp11 and Tm11 per pixel shown in figure 1, and Shields teaches storage element coupled to switching TFT shown in figure 4 ) .

As to claim 20, the voltage signal modulation circuit of claim 18, wherein said second circuit is adapted to sample the voltage signals of the respective voltage signal storage elements at a substantially predetermined rate ( Shields teaches AC driving, column 1, lines 57-59, thus driving frequency ).

As to claims 21 and 23, the circuit of claim 18, wherein said second circuit is further adapted to sample the voltage signals of the respective voltage signal storage elements ( Shields teaches a sample and hold circuit ( column 2, lines 58-59) so as to substantially maintain a substantially DC bias.

As to claim 24, Takahara et al. discloses a display system ( LCD image projection television system, column 7, lines 41-42) comprising a voltage signal modulation circuit to locally modulate the voltage signal applied across a light modulating element in said display system: a first circuit configuration to substantially simultaneously ( simultaneously operating GIC (P) and



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GIC (M), Takahara et al., column 19, lines 13-15) drive respective voltage signals (applying on-voltage to every other gate signal line, Takahara et al., column 19, lines 13-15), (source driver IC(p) 11 and IC(M) 12 shown in figure 2) and a second circuit configuration (TFT as switching elements for writing signal to pixel electrodes, column 6, lines 63-64 to alternately sample the voltage signals (changeover circuits, column 19, lines 55-65) at a substantially predetermined rate. However, Takahara et al. fails to teach voltage signal storage elements. Shields teaches voltage storage elements (storage capacitors 24, figure 4, column 2, lines 58-63). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the apparatus of Takahara et al. and provide storage capacitors at each pixel cell, as taught by Shields to obtain the apparatus Takahara et al. modified by Shields because it would provide a sample and hold circuit as taught by Shields (column 2, lines 58-60) and facilitate storage of video signal. Note that Takahara et al. teaches first field scanning operation with applied signal V+ and second field scanning operation with applied signal V- (column 14, lines 40-68), the signal written into each pixel electrode changes in polarity (column 14, lines 65-68), the aforementioned TFT as switching elements for writing signal to pixel electrodes operates independently of other TFT; this corresponds to the claimed first circuit adapted to apply the respective positive and negative voltage signals onto the first and second voltage storage elements independently of application of voltage signals to other storage elements.

As to claim 25, the system of claim 24, wherein said system is adapted to drive substantially simultaneously additional voltage signals onto the respective voltage signal storage elements ((applying on-voltage to every other gate signal line, Takahara et al., column 19, lines 13-15)

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onto respective voltage storage elements ( Shields , storage capacitors 24, figure 4, column 2, lines 58-63).

### CONCLUSION

6. The prior art made of record but not relied upon is pertinent to Applicant's disclosure.

US Patent                      5,977,940              Akiyama et al.

Reference Akiyama et al. is made of record as it discloses a liquid crystal display device with two transistors and two storage capacitors per display element.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **FRANCIS N NGUYEN** whose telephone number is **703 308-8858**. The examiner can normally be reached during hours 8:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **RICHARD A HJERPE** can be reached at 703 305-4079.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 ( for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor ( Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service whose telephone number is (703) 306-0377.

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FRANCIS N NGUYEN

Examiner

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FN

June 17th, 2003



RICHARD KJERPE  
SUPERVISORY ENGINEER  
TECHNOLOGY CENTER 2000